

### **REMARKS**

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application and for indicating that claim 11 is allowable.

#### **Disposition of Claims**

Claims 5, 10, and 11 were pending in this application. Claim 10 has been cancelled by this reply, and new claims 12-15 have been added. Therefore, claims 5 and 11-15 are pending after these amendments. Claims 5 and 12 are independent. The remaining claims depend, directly or indirectly, from claims 5 and 12.

#### **Claim Amendments:**

Claims 5 and 11 have been amended to clarify the present invention recited. In addition, claim 5 now includes the limitation from claim 10, which has been cancelled. No new matter has been introduced by these amendments.

New claims 12-15 have been added. Support for these claims can be found, for example, in paragraphs [0042] – [0044] and Figures 4 and 5. No new matter has been introduced.

#### **Rejection(s) under 35 U.S.C § 102**

Claims 5 and 10 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Publication No. US 2003/0143725 A1 (Chen et al.). Claim 10 been cancelled in this reply, rendering the rejection moot with respect to this claim. Claim 5 has been amended in this reply to clarify the invention recited. To the extent that this rejection may still apply to the amended

claim, the rejection is respectfully traversed.

The present invention, as recited in claim 5, relates to a kit for fabricating an integrated biomolecule sensor with probe polymers immobilized to the *core-end faces* of optical fibers at one end. Specifically, the kit of claim 5 comprises (i) an optical fiber bundle unit, which comprises a plurality of optical fibers held together at proximal ends in an ordered array with end-faces arranged substantially in the same plane and oriented substantially in the same direction, wherein *core end-faces* at one end of the plurality of optical fibers are configured to attach probe polymers; (ii) a plate with wells for holding solutions containing the probe polymers in an ordered array; and (iii) an auxiliary plate, which can be detachably fitted on top of the plate and has holes aligned with the corresponding wells of the plate for passing distal ends of the plurality of optical fibers therethrough into the wells. One embodiment of such a kit is illustrated in FIG. 2.

Note that an optical fiber of the invention, like a conventional fiber optic, has a solid “core” wrapped in a cladding (see FIG. 1(b)). The core and the cladding comprise different materials having different refractive indices so that light can be efficiently propagated in the “core” of the fiber optics without significant loss of light energy. The probe polymers are to be immobilized to the *core end-faces* of the optical fibers (FIG. 1(b)).

In contrast, Chen et al. discloses bundles of *capillaries* linked to a probe reservoir, which may be the well in a standard microtiter plate. “As shown in FIG. 3, the capillaries 301 can be *permanently* fixed to a frame 302 in a grid, which has the same spatial pattern and pitch as a standard microplate 304. Then the frame can be locked on to a standard microplate to establish the fluid linkage for each capillary.” (page 7, paragraph [0088]). “The capillary include, but are not limited to, *fiber optic* or other light-conducting *capillaries*, through which light *as well as*

fluid can be conveyed.” (page 2, paragraph [0016]). It is clear that the “fiber optic” *capillaries* of Chen et al. have hollow centers and, therefore, will not have “core” end-faces for the attachment of probe polymers. Specifically, Chen et al. does not teach or suggest “core end-faces” for the attachment of probe polymers.

Furthermore, an auxiliary plate of the invention, as recited in claim 5, has holes to permit the distal ends of optical fibers to pass through. That is, the optical fibers are not permanently fixed to the auxiliary plate. In contrast, the frame 302 (as shown in FIG. 3) of Chen et al. is a retainer to which the capillaries 301 are *permanently* fixed to hold the capillary tips 303 in alignment with the wells of a standard microplate 304 (page 7, paragraph [0088]). The frame 302 of Chen et al. is therefore different from the auxiliary plate in the kit of claim 5. Therefore, Chen et al. does not teach or suggest an auxiliary plate having holes for passing distal ends of optical fibers.

Because Chen et al. fails to teach or suggest limitations of claim 5, claim 5 is patentable over Chen et al. Accordingly, withdrawal of this rejection is respectfully requested.

## **New Claims**

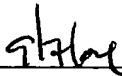
Claim 12 recites an embodiment similar to that of claim 5, except that the embodiment of claim 12 has a plurality of partial optical fiber bundle units that can be assemble to form a complete optical fiber bundle unit. Claim 12 includes the same limitations that the probe polymers are immobilized to the core end-faces of the optical fibers and the auxiliary plate includes holes for passing the optical fibers therethrough. Therefore, claim 12 is patentable over Chen et al. for the same reasons. Claims 13-15 depend from claim 12 and, therefore, are patentable for at least the same reasons.

**Allowable Subject Matter**

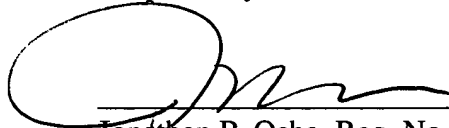
Claim 11 has been indicated to be allowable. For reasons set forth above, Applicant believes that claim 5 is allowable. Therefore, Applicant respectfully defers rewriting claim 11 in independent form at this time.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05426.013002).

Date: \_\_\_\_\_



Respectfully submitted,



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